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A study was made of 200 Cooperative Extension Service workers in New York State to identify appropriate curriculum content for training professional leaders in extension education. The critical incident method was used to discover behavior patterns characteristic of professional extension agents and of key importance in their work. Respondents were asked to recall instances of effective and ineffective behavior on their part, to emphasize behavior critical to achieving an effective outcome, and to indicate why they considered a given incident effective or ineffective. Finally, a structure of relevant concepts was identified and linked to behavioral categories. Key behavior was grouped within seven major categories; preconditioned or set behavior; programing; mobilizing resources and facilitating action; coordinating action to administer agency programs and activities; providing voluntary leadership; influencing clientele evaluation and adoption of innovations; and regulating programs and activities. Concepts were identified and interpreted under the headings of the system and its growth and development, planning change and development, managing change and development, and influencing the evaluation and adoption of innovations. (LY)

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AN IDENTIFICATION OF CRITICAL BEHAVIOR AND RELATED MAJOR CONCEPTS RELEVANT TO THE TRAINING OF PROFESSIONAL LEADERS IN EXTENSION EDUCATION

a paper

prepared for presentation at the

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Summary

In 1967-68 the writer undertook a study in New York state which had as its ultimate objective the identification of appropriate curriculum content for the training of professional leaders in extension education. The study was under the direction of Professor J. Paul Leagans of the Department of Adult and Extension Education at Cornell University.[1]

The study had two prime objectives among others: the first was to identify, by means of the critical incident technique, patterns of behavior which are characteristic of professional extension agents and which are of key importance in carrying out their responsibilities effectively; the second was to derive from current professional behavior, a structure of related key concepts which might serve as the basis for a curriculum.

Some 200 members of the personnel of the Co-operative Extension Service in 30 counties of the state were interviewed. Incidents described by respondents were recorded on audio tape and later transcribed onto cards. Summary cards served to isolate key behavior relevant to each incident and made possible the subsequent grouping of behavior within appropriate categories of a classificatory system.

In the final stage, a structure of relevant concepts was identified and linked to appropriate behavioral categories. An attempt was made to structure concepts in accordance with a systems analysis, and finally some 60 key concepts which represent or subsume the total content were identified.

The Problem

Extension systems function to identify existing needs of people--individuals, interest groups, communities, sectors of the economy, etc.--and to meet these needs by tapping existing sources of relevant information; they are, in essence, communication systems which, for their continuing viability, are dependent, first upon the continuing existence of sources of high concentrations of information relevant to areas of need within the system and secondly upon the ability of its professional personnel to identify important areas of need, to effect linkage with appropriate sources of information, and to guide the communication process toward need satisfaction.

The study under review seeks to make a contribution toward answering the questions: What does the professional extension agent need to know and be able to do, if he is to perform his function effectively.

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[1] E. Weldon Findlay, "Curriculum Development for Professional Leaders in Extension Education," (Ithaca, New York: unpublished Ph.D. thesis, Cornell University, 1969) pending.

The Study's Significance

In brief, research leading to the development of a curriculum for professional leaders in extension education holds significance for, at least, the following reasons:

1. As a profession, extension education is one which exhibits a continuing capacity for development. It is a newly emerging field at the graduate level of training. Consequently, its content is neither fully identified nor organized into a fully comprehensive and generally accepted curriculum.

2. There is an expanding interest in advanced training in the general area of adult and extension education.

3. Extension education is a field that is increasingly going forward. Not only is there an expanding body of theory attached to it, but its significance as a central process of social change and development has spread world wide.

4. Extension education is interdisciplinary in nature and derives content from a number of behavioral disciplines, a fact which holds implication for future organization and orientation as well as for the identification of relative concepts bearing upon the field.

5. The field of extension education, and consequently, the task of identifying its constituent conceptual elements is complex.

6. There has been a relatively small amount of research done in the area of identifying the essential professional competencies of extension educators leading to the development of curricula. Techniques for their identification vary with no well defined approach to the task. While a number of techniques of need identification, job description and analysis have been applied to the task, these have not been highly satisfactory. The study under review represents attempts at a new approach to the problem.

7. Finally, the present study is significant as a contribution to a developing concern for, and real trend toward, ultimately defining not only what people need to know but to translate and structure these requirements in conceptual form. Existing curricula need continuous revision to keep them up to date with the rapidly accumulating body of knowledge. The clarification of what professional leaders in extension education need to know by way of a structuring of central or key concepts will be a step toward meeting existing needs for a curriculum which is both comprehensive in scope and current in content and one which may achieve general acceptance as a basis for advanced professional development.

Some Underlying Assumptions

The study as a whole and the techniques and procedures used are based on a number of underlying assumptions:

1. A curriculum, which has as its objective the training of professional leadership in extension education, must have its base in, and be designed in accordance with, the tasks the extension educator is expected to carry out in the process of fulfilling the functions of the extension agency and in achieving the stated objectives of its programs.

2. Individuals participating directly in or closely associated with a particular activity are most capable of identifying the key behaviors or key requirements for success in that activity since such judgments, based on actual experience, are likely to be most valid.

3. By effectively sampling the present thinking and behavior of extension educators, it is possible to obtain an adequate understanding of their functions, and of the knowledge, skills and values which are of key importance to the successful performance of these functions.

4. Through the identification of behavior, considered to be of key importance in the effective functioning of professional leaders in extension education, and by linking this behavior to related key concepts and conceptual structures, it is feasible to develop a curriculum which meets the needs of professional leaders in respect to knowledge, general skills and certain important values.

5. A curriculum which places emphasis on a relatively small number of concepts, principles, skills of a general nature, or value orientations which are of central importance, will better prepare professional leadership in extension education to cope with the tasks of promoting change and development in a wide variety of situations and circumstances and under conditions of rapidly changing technology, than will a curriculum based on a large body of relatively unstructured facts.

6. The critical incident technique, which collects actual behavior of respondents, provides more valid data than traditional techniques which merely provide job description and reflect opinions.

Previous Research

For the purpose of developing training programs which meet the functional needs of performing a particular job, some kind of "job analysis" or "operations analysis"[1] is required to identify what the individual has to be able to do in order to carry out his duties effectively.

Procedures commonly employed in "job analysis" include:

1. Review of the literature concerning the job;
2. Actual performance of the job;
3. Observing the job and recording behavioral steps, either over a continuous period or by means of a sample; and
4. Asking questions about the job either (a) through interviews with job incumbents or with others who are familiar with the job content or (b) through questionnaires.

While the general procedures are the same, in outline, for jobs comprising largely motor skills as for managerial, administrative and professional positions, the latter are much more complex; they comprise abilities and complex skills which are highly cognitive in nature and which are not so readily observable or identified.

Among early studies relating to the development of appropriate curriculum content for the training of professional extension workers were those by Wilson and associates.[2] Field extension personnel were asked to react to suggested curriculum content presented to them in the form of the names of proposed courses of study or in the form of fields of knowledge or subject matter. These and similar studies tended to be biased by the respondents' previous experience with the courses, subject matter or fields in question. In addition, the resulting data usually were not at a level to permit the identification of specific content for courses.

J. Paul Leagans was among those who identified training needs and curriculum content from an analysis of existing literature -- research reports, reports of agency activity, job descriptions, and statements pertaining to the philosophy, objectives and the role of the extension service-- as well as from personal discussion with key individuals -- deans of colleges of agriculture and home economics, extension directors, supervisors, specialists and county agents -- and from personal discussion with graduate students at both the Master's and Doctoral levels. Leagans

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[1] William McGehee and Paul Thayer, Training in Business and Industry (New York: John Wiley & Sons, Inc., 1961). They provide a discussion of "job analysis" and "operations analysis".

[2] M. C. Wilson, "Training Extension Workers for the Job," Extension Service Circular 295 (mimeographed), (Washington: United States Department of Agriculture, 1938).

identified some 12 professional abilities which he said represented some of the major areas of competency that appeared necessary for success in extension work at that time.[1]

J. L. Matthews developed a method for determining the training needs of county extension agents as the basis for planning training programs which would provide data at a level more appropriate to identifying specific course content than previous research, he developed a set of criteria which were expressed in terms of the knowledge, skills, and attitudes the agents need for effective performance of their duties. County agents were asked to respond to this set of criteria indicating the relative importance they placed on each of them and at what level they thought relative training should be received -- i.e. at the undergraduate level, graduate level, apprentice training or special classes.[2]

But none of these techniques permit direct observation of the behavior of extension agents in the field. Rather, the identification of training needs and curricula content has been determined on the basis of descriptive reports and opinions of extension personnel. Actual performance of the job and its direct observation has been largely precluded for the researcher in extension because of its complex nature.

During and following the last world war, John Flanagan developed a technique which, while a refinement of the method of asking questions about a job, permits the collection of data which is linked to direct observations of the behavior of those performing the job. Thus, the resulting data relates to actual behavior of job incumbents as opposed to descriptions and opinions. The technique has been used to develop criteria for the selection of airforce personnel during World War II, and similarly, in developing critical requirements for dentists, nurses, foremen and social workers.[3]

The unique advantages of Flanagan's technique seemed to merit its use, at least on an exploratory basis, as a tool for the identification of training needs of professional leaders in extension education based upon their actual behavior in the conduct of extension activity.

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[1] J. Paul Leagans, Developing Professional Leadership in Extension Education, Comparative Extension Publication No. 3 (Ithaca, N.Y.: New York State College of Agriculture, Cornell University, 1958).

[2] J. L. Matthews, "A Method for Determining the Training Needs of County Extension Agents as the Basis for Planning Training Programs," (Chicago, Illinois: unpublished Ph.D. thesis, University of Chicago, 1950).

[3] John C. Flanagan, "The Critical Incident Technique," in Psychological Bulletin, 51, Vol. 4, 1954, pp. 327-358.

The Critical Incident Technique

Briefly, the procedure followed in the present study was to request each respondent to recall two incidents from his experience of the past several years -- one in which his behavior had led to an effective outcome, and a second where his behavior had led to an ineffective result. During the process, respondents were asked to identify their behavior which was critical, or of key importance, in the achievement of an effective or an ineffective outcome.

"Critical behavior" is defined as behavior "which is crucial in the sense that it has been responsible for outstandingly effective or definitely unsatisfactory performance of an important part of the job or activity in question."[1] In the study under review, the county extension agents themselves acted as observers; their observations of their own behavior, or the effectiveness of this behavior in accomplishing the desired objectives of the particular activity in a satisfactory manner, constitutes the only source of primary data regarding the "critical requirements" of the job in terms of behavior. Flanagan points out that:

> . . . Neither outstanding ability nor unsatisfactory ability can exist independently of a series of observed behaviors. Success and failure in the activity are nothing more nor less than a series of actions leading to observed results.[2]

It should be clear that the technique does not attempt to evaluate behavior. What it does is to identify or describe behavior which has had a key influence on the achievement of effective or ineffective outcomes in specified activity. While recognizing that the technique contains many subjective elements when applied to the complex cognitive and attitudinal aspects of the behavior of extension agents, the decision to use the critical incident technique in the present study was based on the following considerations:

1. The technique offers advantages over those used in previous research relating to the training needs of extension agents since it identifies the actual behavior of incumbent extension agents in concrete situations rather than merely describing it or expressing opinions about training criteria or competencies needed by extension workers.
2. The technique, which in this study uses the extension agents themselves as observers, samples behavior described by the actual performers who, alone, are in a position to identify their behavior and to stress that which was critical in a particular instance.

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[1] John C. Flanagan, "Job Requirements," in Current Trends in Industrial Psychology, ed. by W. Dennis (Pittsburg: University of Pittsburg Press, 1949) p. 45.

[2] Ibid.

3. The technique requires the observer to distinguish between the critical or key behavior as judged by its significance in effective performance, while deemphasizing other less critical behavior.

4. The technique permits the extension agents, as observers, freedom of choice in the incidents they recount and, in consequence, behavior is spontaneously extracted in contrast to techniques which require respondents to react to suggestions or ideas initiated by the researcher. This is critical where the identification of behavior is the objective.

Some of the recognized disadvantages of the technique include the following:

1. The technique is dependent upon the ability of extension agents to recognize and identify their own behavior and upon their objectivity in identifying what behavior was critical in the particular incident.

2. Since the technique deals with incidents of behavior which are known to the respondents alone, there is no adequate measure of criticalness other than the judgment of the observers who themselves provide the incidents.

3. The technique permits the identification of what the extension agents are actually doing but it does not establish what they ought to be doing either at the time of the study or in the future, that is, it does not attempt to evaluate behavior.

Collecting the Data

Initially, the study proposals were influenced by two major factors. First, there was the expectation that it would be undertaken in conjunction with similar studies in a number of other states in addition to New York. Such an arrangement would assure the minimum number of incidents thought to be necessary by Flanagan for use of the critical incident technique with studies relating to such complex professions as extension education in order to achieve the required stability. A second factor was the existence of an already pretested instrument which could be utilized with a minimum of alteration.

As it turned out, it was eventually necessary to proceed with the study on the basis of the New York sample alone. Largely because the final sample would be smaller than that thought to be necessary for a really adequate representation of extension agent behavior, considering the complex nature of the activities of extension agents, the study became more exploratory in nature; it placed greater emphasis on a second objective: the identification of related concepts and their organization within some form of conceptual structure which might suggest some meaningful organization of content for curriculum purposes.

The Instrument

The original instrument was designed and pretested by members of the National Seminar on Improvement of Curriculums for Extension Educators.[1] Six states cooperated in the pretest reporting on a total of 57 interviews which provided 55 effective and 53 ineffective incidents which were usable. Some changes were made in the instrument on the basis of the pretest; for instance, it was thought advisable to limit the time period within which the incidents could be selected to "within the last three years" to lessen inaccuracies resulting from the faulty memory of observers.

A trial run was made with the instrument by the writer and Dr. J. Paul Leagans of Cornell when it was used to complete several scheduled interviews while establishing procedural technique. At this time it was decided to eliminate the play-back of the taped interviews (as originally called for) as this procedure was not only excessively time consuming but also unnecessary unless, for some particular reason, a play-back was considered necessary, by either the respondent or the interviewer, in specific circumstances.

Essentially, the instrument is a semi-structured interview guide. It provides an introductory statement by which the interviewer explains the purpose and general nature of the study, and of the technique, and then requires the respondent to recall and describe two incidents from his past experience -- one where his behavior led to an ineffective outcome and another where it led to an effective outcome.

The Sample

The procedure taken to procure a random sample of county agents to serve as respondents (or observers) in the study was to select a sample of the counties within the state and then to include all of the county agents within the counties selected in the sample. A sample of 30 counties was selected by a random process using a standard list of counties in the state. This sample provided a possible total of 253 county agents without allowing for staff changes that took place between the time of selecting the sample and the time of the actual interviews. A total of 419 incidents were eventually available for analysis from a sample of 211 respondents.

Such sample characteristics as the age, sex, professional and/or administrative position, length of service, degree qualifications, and subject matter specialization of respondents is available elsewhere.[2] It will suffice to note that the sample included representatives of the former divisions of agriculture, home economics and 4-H.

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[1] Frank D. Alexander, "Pretest of Critical Incident Technique with County Extension Agents," (Ithaca, New York: a report prepared in cooperation with the National Seminar on Improvement of Curriculum for Extension Educators, mimeographed, 1965).

[2] Findlay, op. cit.

Interview Procedure

Once the sample counties had been identified, letters were sent out to county chairmen or to senior county agents through the office of the Director of Extension, New York State College of Agriculture, Cornell University. Letters served to introduce the study and its general purpose and to give to it some degree of official support without revealing the essential nature of the interviews; the latter was by design to prevent prior selection of incidents by respondents. The writer then made direct contact with the senior agents in each county of the sample for the purpose of drawing up a schedule of interviews.

In practice, the following steps were taken in collecting the data:

1. Introductory statement by interviewer

The writer found it important to allow ample time at the beginning of the interview to fully explain the study and the technique as this served to set the tone for the interview; once the value of the study and its confidential nature were recognized most respondents were very cooperative and even enthusiastic.

What was said at this stage was largely dependent on the expressed attitudes and general responsiveness of the respondents. Where respondents' behavior suggested a casual, or even flippant, attitude toward the technique, extra emphasis was placed on the importance of the study and its implications for identifying the critical requirements for training. On the other hand, in instances where the respondents seemed overconcerned as to the proposed use of the material and seemed hesitant to describe incidents which might reflect on their personal adequacy as professionals in some way, it was necessary to stress the confidential nature of the study as well as the value of obtaining a wide range of behavior in different kinds of activities if the data obtained were going to reflect all of the kinds of things extension agents do and for which it is necessary to provide training.

Of critical importance in introducing the study and technique was to explain to respondents just what was meant by "behavior" for purposes of the study -- i.e. that behavior, as defined, includes not only what one does and what can be observed but also what one thinks and feels and what one is able to do; that is, cognitive, affective, and psychomotor behavior.

2. Request for an Effective Critical Incident

a. The respondent was given an example of an effective, critical incident to read;

b. The respondent was asked to recall an incident which took place within the past three years in which he considers his behavior to have been effective;

c. The term "incident", as interpreted for purposes of the study, was defined broadly so that it might include any comprehensive extension activity ranging from a whole program, or any part of one, to a simple incident which took place at one point in time. This was considered necessary in order to obtain a wide variety of incidents which might be expected to contain all or most of the kinds of behavior regularly practiced by respondents.

d. The importance of emphasizing critical behavior -- that which "makes the difference" between effective and ineffective behavior-- was stressed;

e. The respondent was asked to state the specific objective or goal of the activity -- what he was trying to accomplish -- in the incident he has chosen;

f. The respondent was asked to indicate why, or on what basis, he judged the activity to be effective; an effective incident was defined as one in which the respondent (observer) judged, on the basis of some accepted criteria, that the objectives of the activity had been effectively achieved. The criteria used by observers varied from the direct observation of changed behavior as when a new practice was accepted and put into operation by a client to evidence that clientele had gained the desired new knowledge or understanding or that there had been a change of attitude as indicated through conversation, questions asked and so forth.

g. (If, at this stage, it was mutually agreed that the incident was not really an effective one, then, steps e and f were repeated in respect to an alternative incident. This happened rarely in practice).

h. The accepted effective incident was then recorded on tape according to a prescribed outline:

   1) Time, place, persons involved and circumstances leading up to the incident;

   2) Description of the respondent's behavior which led to an effective outcome;

      a) (in practice, it was frequently found advantageous to stop the tape recorder at this point and to allow the respondent time to collect his thought; this usually resulted in a more orderly and systematic presentation when the interview proceeded;)

      b) The respondent was again reminded to emphasize behavior that was critical to achieving an effective outcome -- that which really "made the difference";

c) Where behavior described appeared to be complicated with a large sequence of behavioral steps, respondents were asked to summarize their behavior or to delimit it to those few -- one or two or so -- behaviors which were really critical to the outcome. Sometimes this was done; more often, it was not possible to delimit the behavior in this way as there was a sequence of critical behaviors and the deletion of any one in the sequence would have resulted in failure.

d) The interviewer probed for additional behavior, where necessary.

3) The respondent was asked to repeat, for recording purposes, why, or on what basis, he considered the incident to be effective, in accordance to what he had said at e and f above.

i. The instrument called for the tape to be played back at this point while the interviewer checked the items on the outline and probed for additional details required; in practice, this was never done except where either the interviewer or the respondent were not already satisfied that all essential details had been recorded.

3. Request for an ineffective incident

(Steps a to i were then repeated in respect to an ineffective incident.)

General Comments on Interview Procedure

Ineffective incidents were generally much shorter than effective incidents, probably for a number of reasons. Where respondents enthusiastically prolonged their explanations of the effective incidents, once they realized the whole process was being repeated in respect to an ineffective incident, they recognized the need for brevity if the interview was not to become excessively long. But there was frequently some reticence to talk about their failures. Two respondents said the nature of their work was such that it was entirely effective and so gave no ineffective incident. At this point, the interviewer frequently expressed the view that ineffectiveness is a relative thing and so ineffective incidents may not, necessarily, represent complete "disasters" or failures in every respect. For instance, if the major reason for an ineffective incident is inadequate participation, the activity itself might be effective for those who do participate. For this reason, ineffective incidents frequently provided information about what respondents did "that was right" as well as what they did "that was wrong" or what they neglected to do.

The respondents were frequently more analytic in their presentation of ineffective incidents than they were with effective ones, although not invariably. Some respondents said they wanted to forget about what they did wrong while others said such incidents stood out in their memory because of their attempts to understand the reasons for their failures so as to avoid the same mistakes again. In some instances, respondents were

at a loss to say what went wrong; in such cases they were asked to say what they would do differently another time to make the activity more effective. This often brought the desired response.

But in some instances respondents maintained they were not prepared by training or experience to cope with the situation. This was often the case where the situation concerned disadvantaged groups or where there were interpersonal conflicts of some sort. Frequently they were not able to adjust to a new and unexpected situation.

The foregoing suggests that the ineffective incidents served their purpose well in eliciting kinds of behavior that were not forthcoming from effective incidents. Respondents were, in general, better able to identify the critical behaviors -- those which really made the difference between success and failure -- in the ineffective situations, although not always. Perhaps there was some therapeutic effect in having given an account of their effective behavior prior to being asked to talk about their ineffective behavior.

Processing the data

Interviews were summarized on summary cards from the typed accounts of the interviews. Summary cards included an account of respondent characteristics -- age, sex, professional and administrative position, length of service, degree qualifications, major and minor fields of specialty at the undergraduate and graduate levels of training; a statement of the objectives or purpose of the activity and the basis whereby it was determined to be an effective or ineffective incident; a brief summary of the situation -- people involved, and factors leading up to the incident; a listing of the behaviors including cognitive and affective as well as motor and psychomotor; and a summary of the critical or key behaviors. Cards, as originally designed provided space for derived concepts in respect to each incident. In practice this was not used as concept linkage was not attempted until after behaviors had been classified and categorized.

Behavior Analysis

Once the interview data were placed on summary cards, the next major step was to group behaviors within some system of classification or categorization. It was also necessary to define the term "behavior" as it would be viewed for purposes of the study.

A Concept of Behavior

Human behavior may be perceived as sequences of "acts" which have some directional orientation. As such, behavior is viewed as "process". Behavior or process is frequently labelled or understood in terms of the direction in which it is moving; that is, in terms of assigned goals and purposes consciously or unconsciously pursued.

But the criteria of understanding human behavior in terms of assigned goals and purposes differ from those of the physicist. For example, while the physicist demands that variables -- behavior or processes expressed as trajectories derived from equations -- be physically measurable quantities in the nature of positions, masses, electric charges, or magnetic moment, behaviorists "understand the event directly by perceiving wholes rather than parts: man, his circumstances, his preferences, etc."[1]

The function of behavior can be interchanged with that of problem or goal as well as with process. A process assumes a-problem-to-be-solved; a problem-to-be-solved assumes a goal. Thus, the behavior in goal attainment, tension reduction, or in program planning consists of processes which may also be viewed in terms of problems-to-be-solved or as goals-to-be-attained or achieved.

Behavior, as defined in this study, refers to anything the individual does, including such acts as feeling, thinking, and learning as well as observable behavior. In other terminology, behavior may be said to encompass cognitive, affective and motor aspects, while recognizing that most skills referred to by respondents have highly cognitive dimensions as do values and attitudes. Thus, for instance, the behavior in programming, while highly skilled behavior, is largely cognitive in nature.

Analysis of Incidents

Prior to the more detailed categorization of behavior, an attempt was made to group incident summary cards according to some common characteristics. This resulted in two kinds of analysis of incidents: 1) according to the general objective of the activity of the incident, and 2) according to what the major activity of the incident was.

The first kind of analysis distinguished between such objectives as "Agricultural development: Enterprize promotion" and "Youth development: Club organization" and the like. There were 13 "major incident groups" in all. The second kind distinguished between such activities as "training schools" and "group or individual counseling". Nineteen classes of "major activity" were identified.

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[1]Anatol Rapoport, in Modern Systems Analysis for the Behavioral Scientist, Walter Buckley, ed. (Chicago: Aldine Publishing Company, 1968) p. xvii.

The Process of Behavior Analysis

Data provided from the interviews were almost entirely unstructured; it was, then, necessary to isolate the specific behavior of respondents as identified from the wide range of respondent activity and to place it within groups according to some common characteristic or, as was the case, on the basis of some common behavior goal. Since there was no existing classification within which to group behavior, categories had to evolve from the data itself.

In keeping with the procedure for analysis suggested by Flanagan, a number of broad behavioral areas were first developed within which to group individual behaviors. To determine such areas, a preliminary sorting of behavior from approximately one quarter of the incidents, selected at random, was carried out and a grouping which took into account the general range of behavior developed. As the analysis proceeded, sub-categories were developed within these broad areas and the areas themselves adjusted to conform to the data.

The process, then, has been one of examining each new entity as observed, measuring its dimensions or attributes, applying this new entity, to existing categories to determine its degree of fit, and subsequently, classifying it according to existing categories or establishing a new category which takes its peculiar properties into account. The procedure has led to the system of classification presented in the study under review.

This procedure encompassed aspects of two general principles of analysis: the inductive and deductive approaches. It has been inductive insofar as the data itself has determined behavior categories; it has been deductive in that the original behavior areas and subsequent groups, while arising from the data, have, nevertheless, been influenced to some degree by the analyst's personal view of what seemed to be meaningful areas or groupings.

On the one hand, it was important to ensure that the developing structure of categories did not restrict the continuing process of classification in such a manner as to discourage the development of new categories where new kinds of behavior called for them. On the other hand, the developing structure, in itself, served as a model which made it easier to recognize and classify additional behaviors.

Stated differently, the tenet that "one tends to find what one is looking for" may, justifiably, be presented as a warning to guard against any tendency to restrict or limit the classification of data; but, by contrast, it is frequently difficult to find something if one has no notion or concept of what one is looking for. It is manifest that the analyst take some prior conceptual structuring of what behavior means to him to the analysis table; and it is essential that he do so, for the more clearly he understands it the more surely he can identify it. In this instance, the developing structure itself has served to clarify and define the behavior as the analysis has proceeded and the process itself became more meaningful.

Since the original data were in the form of recordings of the interviews, behavior was expressed in a wide variety of form and terminology, and at varying levels of specificity. This latter factor has necessitated the creation of a hierarchy of categories that, while relating to similar behavior, specify behavior at varying levels of generality. For instance, when a respondent says he recognizes the need for something there may be a question as to whether the need is in reference to some specific clientele as seen by the respondent or whether it refers to a clientele felt need or a need as seen by the clientele himself; similarly, a need may be in reference to some other aspect of the situation or problem in general. Thus, the final classification provides a number of categories of needs in hierarchical form representing different levels of specificity.

The hierarchical classification of behavior, then, presents categories of behavior and sub-categories in descending order of inclusiveness, each sub-category accounting for some aspect of the major behavioral category. For instance, the identification of clientele needs is one aspect of the behavior in situation analysis which is, in turn, one aspect of programming. Frequently, lower level categories are expressed in terms of "how to achieve" the more general behavior expressed at higher levels; thus, needs may be identified by means of home visits or by means of a survey questionnaire.

It will be apparent that in such a hierarchical classification, behaviors at lower levels in one general area may be similar to behavior at lower levels in another area but, in each case, directed toward a different behavior goal or objective. Thus, the change agent may be concerned with guiding decision-making by program planning committees, in respect to community problem solving, and in respect to the clientele in the adoption process. To have simply grouped all behavior associated with decision-making or guiding decision-making together would have missed the point of meaningfulness.

Finally, there were some instances where key behaviors were expressed by observers more by implication than by their exact words. And while some degree of implication may be necessary in the process of identifying what is really going on in a behavioral context from such unstructured data, extreme or excessive use of implication would lead to distortion. At one point, the possibility of keeping a separate account of behavior as stated explicitly by the respondent and as implied from what he said was considered; but, in the end, implication was kept to a minimum necessary to make an account of what was going on meaningful.

In fact, the criterion of meaningfulness has been that taken most into account both in the evolvement of behavior categories and in their final presentation in model form.

Validity of the Technique and the Instrument

The instrument was designed to sample behavior and sequences of behavior performed by extension agents which are of key importance in effective extension activity. And, while no practical and meaningful external test of its validity in the nature of independent or neutral observers was feasible, face validity indicates that the instrument served to measure what it was designed to measure.

It was possible to communicate a clear understanding of the purpose and procedure of the technique to the respondents and to obtain responses in terms of their behavior which has been instrumental in making the activities or incidents either effective or ineffective. Respondents, almost without exception, have been very cooperative indeed and responses indicate a frank accounting of agent behavior.

While respondents have provided a wide range of behavior in keeping with their wide range of activities, their responses have also revealed clusters of behaviors of a central and pervasive nature common to a wide range of agent experience.

As might have been expected there were variations in the degree to which respondents were able to express themselves in behavioral terms and to analyze their behavior with precision. While some were able to view their behavior critically with a high degree of objectivity, others found this more difficult. But the design of the instrument is such as to permit probing by the interviewer where necessary to obtain the kind of information required in terms of agent behavior. And where, in some instances, respondent analysis was superficial, any such tendency was balanced by others who provided clear, explicit statements of analyses of their behavior.

Most respondents recognized the important implications of the study and many were enthusiastic in expressing interest in the results.

Finally, a high degree of face validity was evidenced by authorities who expressed the view that the data obtained "made sense".

Reliability of the Technique and Instrument

The Sample

It has been suggested by Flanagan that a sample of two or three thousand incidents might be required to ensure stability of results from use of the critical incident technique in situations where the nature of the job requirements to be studied is very complex. And, as indicated earlier, it was originally intended that the sample for this study would be merged with those of similar studies in other states to make a total acceptable sample. While this may still be possible, it is not at the time of this writing.

Since the sample, although a relatively large one, was not thought adequate to fully sample the complex behavior of professional extension educators, the study has been treated as exploratory in respect to a second major objective: to link behavioral categories, as identified, to related concepts and conceptual structures. Since this aspect of the study is a major objective in its own right, it may justify the smaller sample.

There is one other compensating factor. Most similar studies have dealt with incidents which were much less complex than those experienced in the present study. The interpretation of the term "incident" in the present study has permitted the inclusion of programs and activities which have extended in time over several months and even over several years and which have subsumed a sequence or series of key behaviors -- up to 15 or 20 -- many of which might have been the subject of separate incidents if the respondents had so desired. This practice has been necessary in order that the more complex behavior of extension leaders involved with programming, evaluation, and the like, over time, might be adequately sampled. But, since the total behaviors provided by one such incident is equal to that provided by several less complex incidents, there may be an additional justification for a smaller sample.

Finally, it may be said that, while it is not expected that the sample has included all possible kinds of behavior performed by extension agents in the wide range of activities in which they participate, there is some indication that behavior which is more general and pervasive within the extension process has, in fact, been identified. It may be expected, then, that similar studies, or an additional sample, would identify many of the same behaviors but with additions experienced in more specific kinds of activities not adequately sampled here.

The Selection of Respondents

The selection of respondents was such as to include all aspects of the state extension program. Since all agents were interviewed in each county selected, an opportunity was provided to sample the full range of county extension activity within the three divisions of agriculture, home economics, and 4-H youth work. Coverage of both rural and urban counties, with their varying emphases, was satisfied within the sample.

The Instrument

The pretest of the instrument by researchers in six states indicated that individuals in varying circumstances and with varying orientations could achieve similar results in its use.

Major Behavioral Areas

The final classification of key behavior grouped behavior within seven major behavioral areas:

1. Area I: Preconditioned or set behavior -- the knowledge, understanding, skills, beliefs, values or attitudes which the extension agent takes with him as he meets any particular situation or undertakes specific activities and which is the result of previous experience, including formal training and education. A total of 448 behaviors fell within this general area and its sub categories.

2. Area II: Programming -- behavior associated with the planning and organization of programs and activities. A total of 952 behaviors were grouped within this major area under its major sub categories of situational analysis, directional analysis and strategy analysis.

3. Area III: Resource mobilization/facilitating action -- behavior which facilitates the pursuit of programmed objectives and activities and which is to some degree preparatory to direct action with the clientele. There were 270 behaviors classified within this area including that associated with providing an adequate agency administrative organization, providing adequate agency personnel, providing essential facilities, procuring, processing, and adapting information, providing essential material aids or requisites, providing guiding policy or regulations and generally providing adequate attention to detail in preparation.

4. Area IV: Coordinating action to administer agency programs and activities -- behavior concerning the action of the extension agent in coordinating the active administration of programs and activities. A total of 589 behaviors fell in this area including that relating to the initiation and maintenance of public relations, to obtaining support for agency programs or activities, obtaining the involvement of key individuals and groups in agency program planning, in agency program organization and in problem-solving activity in respect to specific activities or projects, and other kinds of mediating, cooperating, guiding, stimulating, and coordinating behavior.

5. Area V: Providing voluntary leadership -- the recruitment, selection, training, supervision of voluntary local leaders for various programs, projects and activities; a total of 375 behaviors are included here.

6. Area VI: Influencing clientele evaluation and adoption of innovation -- creating clientele awareness/attracting attention/making contact; motivating participation; establishing credibility; communicating information to guide clientele evaluation; guiding practice/rehearsal toward clientele satisfaction. A total of 1340 behaviors fall within this major behavioral area.

7. Area VII: Regulating agency programs and activities -- the evaluating, feedback and adjusting behavior associated with agency program or activity regulation and which helps facilitate optimum levels of program efficiency and effectiveness in accordance with ultimate objectives. A total of 116 behaviors were included within this area.

Since incidents were analyzed separately by "major incident groups" the data provides information for each major behavioral area by major incident group. In addition, separate attention was given to incidents and behavior associated with disadvantaged groups.

The Identification and Structuring of Concepts

A good deal of time has been occupied with the identification of concepts which relate to the various categories of behavior and with their interpretation and organization within a meaningful structure. The notion of "systems" and "systems analysis" has been used as the central organizational rationale. The use of this particular organizational rationale seemed to be particularly appropriate since the extension service -- or extension system -- deals with systems at a number of levels -- the cognitive system, the individual self or personality system, and a wide range of individual sub systems of the general socio-cultural system.

Concepts have been identified and interpreted within four general areas which seemed to be particularly meaningful units:

1. The system and its growth and development. In addition to the interpretation of the concept of system and its application to the extension system, much of the basic theory relevant to extension education has been discussed under nine "systemic processes" which would appear to be common to systems at various levels:

   a. Growth and development;
   b. Change, adjustment and adaptation;
   c. Feedback;
   d. Evaluation;
   e. Management;
   f. Motivation;
   g. The communication of information;
   h. The processing and storage of information (including general learning theory);
   i. Gross behavior, action, functioning, or operation.

2. The planning of change and development;
3. The management of change and development; and
4. Influencing the evaluation and adoption of innovation.

While the first of these areas subsumes concepts relating to general theory concerning systems at a number of levels, the other three major areas subsume concepts which pertain to the behavior of extension agents, or to change agents in general, in planning, managing and influencing the change and development of systems at the cognitive, self or personality, and socio-cultural organizational levels.

Finally, a summary of some sixty "key concepts" -- concepts which represent a conceptual unit or area, in themselves, such that an understanding of the key concept will imply, as well as facilitate, an understanding of their related component concepts or sub concepts -- has been made. It is hoped that these key concepts can either stand by themselves or be grouped with others to form meaningful teaching/learning units for curriculum purposes.

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